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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,005	07/22/2005	Shuichi Watanabe	1907-0227PUS1	2443

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EXAMINER

ABRAHAM, ESAW T

ART UNIT	PAPER NUMBER
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2112

NOTIFICATION DATE	DELIVERY MODE
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09/04/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/543,005	Applicant(s) WATANABE ET AL.	
	Examiner ESAW T. ABRAHAM	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30,31,36-38,43-46,48,49,51-54,56,57 and 59-63 is/are pending in the application.
- 4a) Of the above claim(s) 32,33,39,40,47 and 55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30, 31, 36-38, 43-46, 48, 49, 51-54 and 56, 57, 59-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Applicant's Amendment

- In view of the amendment filed on 06/18/08, the Examiner withdraws all objections to the Abstract.
- The drawings (Replacement Drawing sheets) were received on 06/18/08. These drawing are accepted.
- In view of the amendment filed on 06/18/08, the Examiner withdraws all objections to the claims.
- Claim rejection under 35 USC 101 is withdrawn in light of amendments.
- Applicant's arguments filed On 06/18/08, with respect to the rejection(s) of claim(s) *30, 31, 36-38, 43-46, 48, 49, 51-54 and 56, 57, 59-63* under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Applicant's Admitted prior and Murashita et al. in view of Fukuda (U.S. PN: 5,781,237).

DETAILED ACTION

1. Claims **30, 31, 36-40, 43, 45-49, 51 and 53, 54, 56, 57 and 59-63** remain pending.
2. Claims **32, 33, 39, 40, 49 and 55** are cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere CO.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims **30, 31, 36-40, 43, 45-49, 51 and 53, 54, 56, 57 and 59-63** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted prior art in view of Murashita et al. (U.S. PN: 5,907,637) (hereinafter "Murashita") further in view of Fukuda (U.S. PN: 5,781,237).

As per claims 30, 37, 60 and 61:

Applicant's Admitted prior art substantially teaches or discloses an encoding device and an encoding method for encoding a plurality of pieces of position information corresponding to a plurality of leaves and/or nodes at the same layer in a tree structure (see figure 27 and Applicant's disclosure page 4, lines 16-19), comprising, determining unit for determining, in accordance with the predetermined order relationship, a branch layer of two consecutive pieces of position information from among the plurality of pieces of position information output from the rearranging unit (see figure 27 element 2704 and Applicant's disclosure page 6, lines 20-23), and encoding unit for outputting a code corresponding to the branch layer (see figure 27 element 2702 and Applicant's disclosure page 6, lines 11-19). Applicant's Admitted prior art does not explicitly teach a rearranging unit and rearranging step for rearranging, in accordance with a predetermined order relationship, the plurality of pieces of position information to be encoded.

Art Unit: 2112

However, Murashita in an analogous art disclosed a data compressing unit (encoder) compresses input data by encoding the input data according to a history of occurrence of the input data occurring in the past (see col. 33, lines 6-10). Murashita further teaches that the compressing unit comprises a code tree rearranging means (see figure 1 element 105) for exchanging an encoding leaf with another leaf or an internal code and further coupled to a code tree determining means (see figure 1 element 103 for outputting a unique data (see col. 5, lines 29-32 and col. 33 lines 23-34). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to incorporate a rearranging unit for rearranging plurality of pieces of position information in the Applicant's admitted prior art's encoding device as suggested by Murashita . This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would have recognized that by incorporating a rearranging unit within an encoding device would have improve the encoding performance of the encoding device. The admitted prior art in view of Murahita do not explicitly teach the plurality of pieces of position information are rational number position information represented by a rational number, and wherein the predetermined order relationship is determined by the order of magnitude of resolution of the rational number. However, Fukuda in an analogous art teaches video coding apparatus and video coding method (see title and col. 1, lines 6-14). Fukuda further teaches a method of assigning a code quantity suited to a video signal by relating quantizing parameter and a generated code quantity by using a function (see col. 2, lines 10-19). Further, Fukuda in figure 6 teaches a quantizing parameter updating circuit comprising a decrement calculator 601 calculates the decrement $db(j)$ of the code quantity when specified quantity

Art Unit: 2112

qs is added to the quantizing parameter $q(j)$ according to formula (4). Herein, the specified quantity qs is a positive rational number (see col. 8, lines 14-27). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to represent the plurality of pieces of position information or data by a rational number the in the systems of admitted prior art as suggested by Fukuda. This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would have recognized that representing the plurality of pieces of position information or data by a rational number would heighten the encoding efficiency and increase the flexibility of configuration.

As per claims 31 and 38:

Applicant's Admitted prior art substantially teaches or discloses an encoding device and an encoding method for encoding a plurality of pieces of position information corresponding to a plurality of leaves and/or nodes at the same layer in a tree structure (see figure 27 and Applicant's disclosure page 4, lines 16-19), comprising, determining unit for determining, in accordance with the predetermined order relationship, a branch layer of two consecutive pieces of position information from among the plurality of pieces of position information output from the rearranging unit (see figure 27 element 2704 and Applicant's disclosure page 6, lines 20-23), and encoding unit for outputting a code corresponding to the branch layer (see figure 27 element 2702 and Applicant's disclosure page 6, lines 11-19). Applicant's admitted prior art does not explicitly teach plurality of pieces of position information to be encoded being arranged in accordance with a predetermined order relationship. However, Murashita in an analogous art disclosed a data compressing unit (encoder) compresses input data by encoding the

Art Unit: 2112

encoding the input data according to a history of occurrence of the input data occurring in the past (see col. 33, lines 6-10). Murashita further teaches that the compressing unit comprises a code tree rearranging means (see figure 1 element 105) for exchanging an encoding leaf with another leaf or an internal code and further coupled to a code tree determining means (see figure 1 element 103 for outputting a unique data (see col. 33, lines 23-34). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to incorporate a rearranging unit for rearranging plurality of pieces of position information in the Applicant's admitted prior art's encoding device as suggested by Murashita. This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would have recognized that by incorporating a rearranging unit within an encoding device would have improve the encoding performance of the encoding device. The admitted prior art in view of Murahita do not explicitly teach the plurality of pieces of position information are rational number position information represented by a rational number, and wherein the predetermined order relationship is determined by the order of magnitude of resolution of the rational number. However, Fukuda in an analogous art teaches video coding apparatus and video coding method (see title and col. 1, lines 6-14). Fukuda further teaches a method of assigning a code quantity suited to a video signal by relating quantizing parameter and a generated code quantity by using a function (see col. 2, lines 10-19). Further, Fukuda in figure 6 teaches a quantizing parameter updating circuit comprising a decrement calculator 601 calculates the decrement $db(j)$ of the code quantity when specified quantity qs is added to the quantizing parameter $q(j)$ according to formula (4). Herein, the specified quantity qs is a positive rational number (see col. 8,

Art Unit: 2112

lines 14-27). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to represent the plurality of pieces of position information or data by a rational number the in the systems of admitted prior art as suggested by Fukuda. This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would have recognized that representing the plurality of pieces of position information or data by a rational number would heighten the encoding efficiency and increase the flexibility of configuration.

As per claim 36:

Murashita substantially teaches or disclose wherein the tree structure represents search information, and wherein the leaves or nodes corresponding to the plurality of pieces of position information to be encoded correspond to elements of the same type contained in the search information (see col. 13, lines 30-50).

As per claim 43:

Murashita substantially teaches or disclose wherein the tree structure represents search information, and wherein the leaves or nodes corresponding to the plurality of pieces of position information to be encoded correspond to elements of the same type contained in the search information (see col. 13, lines 30-50).

As per claims 45 and 53:

Applicants' admitted prior art substantially teach or disclose all the subject matter claimed in claims 44 and 52. Applicants' admitted prior art do not explicitly teach rearranging unit and rearranging step for rearranging the plurality of pieces of decoded

Art Unit: 2112

position information in accordance with the order of magnitude. However, Murashita in an analogous art disclosed a data decompressing unit (decoder) decompresses decodes an encoded code having been encoded according to a history of data occurred in the past (see col. 10, lines 38-64, col. 38, lines 7-11 and figure 5). Murashita further teaches that the decompressing unit comprises a code tree rearranging unit for exchanging a decoded leaf or another leaf or another internal code (see figure 5 element 205 and col. 38, lines 31-32). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to incorporate a rearranging unit for rearranging pieces of decoding position information in the Applicant's admitted prior art's encoding device as suggested by Murashita . This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would have recognized that by incorporating a rearranging unit within an encoding device would have improve the encoding performance of the encoding device.

As per claim 46-49:

Murashita substantially teaches, in view of above rejections, encoding a input data according to a history of occurrence of the input data in the past comprising collecting the character strings of said input data, numbering them, and entering them in a dictionary, corresponding a code to each of the character strings, encoding and updating the code corresponding to a dictionary number of a longest coinciding character string, entering an elongated character string of said character string to be encoded until said elongated character string reaches a predetermined maximum character string length, entering a code corresponding to said elongated character string (see col. 4, lines 52-64)

As per claim 51:

Murashita substantially teaches, in view of above rejections, wherein the tree structure represents search information, and wherein the leaves or nodes corresponding to the position information to be decoded correspond to elements of the same type contained in the search information (see col. 13, lines 30-46).

As per claim 54 and 56-57:

Murashita substantially teaches, in view of above rejections, a data decompressing method for decompressing encoded data obtained by encoding input data according to a history of the input data in the past, comprising performing context collecting step for collecting character strings of decoded data, performing a coding step for generating and updating a code tree while rearranging the code tree according to said character strings of the decoded data obtained at said context collecting step. Further, Murashita teaches decompressing encoded data obtained by encoding input data according to a history of the input data in the past, comprising collecting character strings of decoded data, numbering them, and entering them in a dictionary, and corresponding a code to each of the character strings of said decoded data, decoding a character string corresponding to a dictionary number as a code and updating it, entering an elongated character string of said encoded character string until said elongated character string reaches a predetermined maximum character string length, entering a code corresponding to said elongated character string (see col. 4 last paragraph and col. 5, lines 5-15).

As per claim 59:

Murashita substantially teaches, in view of above rejections, wherein the tree structure represents search information, and wherein the leaves or nodes corresponding to

Art Unit: 2112

the position information to be decoded correspond to elements of the same type contained in the search information (see col. 14, lines 41-51).

4. Claims **44, 52, 62 and 63** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted prior art in view of Fukuda (U.S. PN: 5,781,237).

As per claims 44, 52, 62 and 63:

Applicant's Admitted prior art substantially teaches or discloses a decoding device and a decoding method for decoding a string of position information code composed of a plurality of pieces of encoded position information corresponding to a plurality of leaves and/or nodes at the same layer in a tree structure (see figure 30 and page 8 lines 9-12), comprising storage unit for successively storing decoded position information (see figure 30 element 3002 and page 8 lines 15-17), determining unit for determining a branch layer of two consecutive pieces of position information based on the position information code (see figure 30 element 3003 and page 8 lines 17-22), and decoding unit for updating the value of the position information, stored in the storage unit, corresponding to the branch layer by one notch in accordance with a predetermined order relationship (see figure 30 element 3004 and page 8 lines 22-26). The admitted prior art does not explicitly teach the plurality of pieces of position information are rational number position information represented by a rational number, and wherein the predetermined order relationship is determined by the order of magnitude of resolution of the rational number. However, Fukuda in an analogous art teaches video coding

Art Unit: 2112

apparatus and video coding method (see title and col. 1, lines 6-14). Fukuda further teaches a method of assigning a code quantity suited to a video signal by relating quantizing parameter and a generated code quantity by using a function (see col. 2, lines 10-19). Further, Fukuda in figure 6 teaches a quantizing parameter updating circuit comprising a decrement calculator 601 calculates the decrement $db(j)$ of the code quantity when specified quantity qs is added to the quantizing parameter $q(j)$ according to formula (4). Herein, the specified quantity qs is a positive rational number (see col. 8, lines 14-27). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to represent the plurality of pieces of position information or data by a rational number the in the systems of admitted prior art as suggested by Fukuda. This modification would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would have recognized that representing the plurality of pieces of position information or data by a rational number would heighten the encoding efficiency and increase the flexibility of configuration.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Esaw T. Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8am-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/EA/

/Esaw T Abraham/

Examiner, Art Unit 2112

08/30/08